



# **Arizona State Retirement System**

**Actuarial Report on the  
Valuation of the System**

**As of June 30, 2013**



January 17, 2014

Retirement Board  
Arizona State Retirement System  
3300 North Central Avenue  
14<sup>th</sup> Floor  
Phoenix, Arizona 85012

**Actuarial Valuation of the System as of June 30, 2013**

Dear Retirement Board Members:

We certify that the information contained in the attached 2013 actuarial valuation report is accurate and fairly presents the actuarial position of the defined contribution program administered by the Arizona State Retirement System (the System) as of June 30, 2013.

We have made all calculations for this report in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, the report's results comply with the requirements of the Arizona Constitution and statutes and, where applicable, the Internal Revenue Code, the Employee Retirement Income Security Act of 1974 (ERISA), and the Statements of the Governmental Accounting Standards Board. The undersigned actuaries are independent. They are both Enrolled Actuaries, members of the American Academy of Actuaries and one is a Fellow and one is an Associate of the Society of Actuaries. They meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. They are experienced in performing valuations for large public retirement systems and are fully qualified to provide actuarial services to the State of Arizona. The undersigned actuaries are not qualified as attorneys or accountants, so their views on such matters are subject to opinion of counsel and auditors. They are available to answer any questions.

**Actuarial Valuations**

The primary purpose of the valuation report is to determine the funded status (i.e., the ratio of market assets to total liabilities) as of June 30, 2013. Arizona State Retirement System (ASRS) former rules call for the reduction of benefits whenever the funded status is less than 95%. The former rules permit benefits to be increased if the funded status exceeds 105%. Based on the Arizona Attorney General's opinion letter of November 24, 2009, which the Board has adopted, System benefits cannot be "diminished or impaired" as defined under Article 29 of the Arizona Constitution. The ASRS Plan guarantees benefits for members who retired or will retire on or after July 1, 1981. The State guarantees the other System benefits. System liabilities of \$412,582,843 (System liability valued using Plan assumptions) for post-June 30, 1981 retirees are included in the Plan valuation. The liability for pre-July 1981 retirees is \$349,558, of which \$68,234 is not funded.

Valuations of the System shall be performed annually, as of June 30, the last day of both the System's year and ASRS' fiscal year.

### Benefit Provisions

Each employer and each active member contribute 7% of the active members' compensation to the System. These amounts accumulate with assumed interest before retirement. If the Board authorizes supplemental credits, non-retired members' balances are increased. When members retire, the System converts their accumulated account balances into actuarially equivalent monthly annuity payments, using interest and mortality assumptions. Supplemental credits that arise after retirement are distributed to the retired members in the form of 13<sup>th</sup> checks. These checks are the annual annuity amounts equivalent to the post-retirement supplemental credits.

There have been no changes in benefit provisions since last year's valuation.

### Assumptions and Methods

We assume investment earnings of 8%, net of all expenses.

Effective June 30, 2013, the ASRS Board adopted revised mortality assumptions for the System. The new mortality assumptions are that mortality experience follows the 1994 GAM – Generational table with Projection Scale BB, with rates adjusted for members with annual benefits greater than \$14,400 and annual benefits less than \$6,000. After adjustments, rates are set back one year for males and two years for females. The adjustments to the baseline mortality rates for large and small benefits are as follows:

<u>Age</u>	<u>Large Adjustment</u>		<u>Small Adjustment</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
0 – 49	No Adjustment		No Adjustment	
50 – 75	75%	84%	139%	133%
76 – 111	81%	90%	105%	100%
112	84%	92%	104%	100%
113	87%	94%	103%	100%
114	90%	96%	102%	100%
115	93%	98%	101%	100%
116	96%	100%	100%	100%
117	99%	100%	100%	100%
118 and over	100%	100%	100%	100%

This mortality assumption includes an assumption about mortality improvement before and after the valuation date. The revised mortality assumptions resulted in an increase of \$22 million in liabilities and a decrease of 4.37 percentage points in the funded status.

The valuation calculates liabilities for nonretired members to be their account balances. For retired members, the liability is the present value of remaining monthly annuity and annual 13<sup>th</sup> check payments. We value assets at market (as reported by ASRS staff), and divide the market value of assets by total liabilities. The ratio is the funded status.

### Executive Summary

The table below develops the funded status of the System (including both benefits guaranteed by the Plan and benefits guaranteed by the State) as of June 30, 2013:

Assets at market	\$	348,386,317
Liabilities for:		
Nonretired members	\$	33,383,427
Retired members – monthly annuities		357,514,059
Retired members – 13 <sup>th</sup> checks		<u>42,002,995</u>
Total	\$	432,900,481
Funded status (assets/liabilities)		80.48%

ASRS former rules say that benefits must be reduced when the System's funded status is less than 95%, and that the Board may increase benefits when funded status is greater than 105%. In this valuation, funded status is 80.48%. Due to the Attorney General's opinion letter of November 24, 2009, which the Board has adopted, the ASRS Plan guarantees benefits for members who retired or will retire on or after July 1, 1981. The State guarantees the other System benefits. System liabilities of \$412,582,843 (System liability valued using Plan assumptions) for post-June 30, 1981 retirees are included in the Plan valuation. The liability for pre-July 1981 retirees is \$349,558.

The tables that follow are organized as follows:

Table 1	Demographic Data
Table 2	Liability Summary
Table 3	Asset Summary
Table 4	Funded Status
Table 5	Gain and Loss Analysis
Table 6	Recommendations
Table 7	System Provisions
Table 8	Actuarial Assumptions

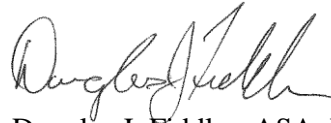
In preparing this actuarial valuation, we have relied on census data and asset information provided by the staff of the ASRS. While we have not verified the data at their source, we have performed tests for consistency and reasonableness. We find the data to be consistent and reasonable. The data on System members is complete and, to the best of our knowledge, correct.

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for those measurements, and changes in plan provisions or applicable law. Due to the limited scope of this report, Buck performed no analysis on the potential range of such future measurements.

Sincerely,



Charles E. Chittenden, FSA, EA, MAAA  
Principal and Consulting Actuary



Douglas J. Fiddler, ASA, EA, MAAA  
Director, Retirement Actuary



## Table of Contents

Demographic Data Exhibits .....	1
Liability Summary .....	11
Asset Summary .....	12
Funded Status .....	13
Gain and Loss Analysis .....	14
Recommendations .....	15
System Provisions .....	16
Actuarial Assumptions .....	17





**Table 1**  
**Demographic Data**

**CENSUS DATA FOR NONRETIRED MEMBERS**

	6/30/2012	6/30/2013
<b>Active Members</b>		
Number of members	11	9
Total of balances	\$ 18.0 million	\$ 17.4 million
Average balance	\$ 1,639,853	\$ 1,934,815
Average age	65.1	67.4
<b>Inactive Members</b>		
Number of members	36	36
Total of balances	\$ 11.0 million	\$ 12.7 million
Average balance	\$ 304,892	\$ 352,100
Average age	80.8	81.4

**CENSUS DATA FOR RETIRED MEMBERS**

	6/30/2012	6/30/2013
<b>Annuity</b>		
Number receiving	1,446	1,370
Average age of members receiving	78.9	79.2
Total annual amount	\$ 39.9 million	\$ 39.4 million
Average annual amount	\$ 27,621	\$ 28,746
Median annual amount	\$ 15,658	\$ 16,396
Maximum annual amount	\$ 295,494	\$ 295,494
<b>13<sup>th</sup> Check</b>		
Number receiving	985 *	907 **
Average age of members receiving	81.7	82.1
Total annual amount	\$ 6.1 million	\$ 5.6 million
Average annual amount	\$ 6,170	\$ 6,208
Median annual amount	\$ 3,956	\$ 3,956
Maximum annual amount	\$ 44,800	\$ 44,800

\* 1,304 eligible for 13<sup>th</sup> checks. 319 have zero 13<sup>th</sup> check amounts (i.e., no supplemental credits since retirement).

\*\* 1,232 eligible for 13<sup>th</sup> checks. 325 have zero 13<sup>th</sup> check amounts (i.e., no supplemental credits since retirement).

## Data Reconciliation as of June 30, 2013

	Active Members	Inactive, Non-Retired Members	Retired Members and Beneficiaries	Total
As of June 30, 2012	11	36	1,446	1,493
Vested Terminations	(1)	1	0	0
Nonvested Terminations	0	0	0	0
Transfer Out	0	0	0	0
Disabled	0	0	0	0
Retirements	(1)	(1)	2	0
New Beneficiaries	0	0	25	25
Deaths with Beneficiary	0	0	(24)	(24)
Deaths without Beneficiary	0	0	(75)	(75)
Benefit Termination/Cashout	0	0	(2)	(2)
Data Adjustments	0	0	(2)	(2)
Net Change	(2)	0	(76)	(78)
As of June 30, 2013	9	36	1,370	1,415

**Distribution of Active Members by Age and Years of Service**  
**Total Active Employees**  
**as of June 30, 2013**

CURRENT AGE	YEARS OF SERVICE				Total
	Below 35	35-39	40-44	45 & Over	
Below 55	0	0	0	0	0
55-59	0	1	1	0	2
60-64	0	0	2	0	2
65-69	0	0	1	0	1
70 & Over	0	0	3	1	4
TOTAL	0	1	7	1	9

**Distribution of Retired Members and Beneficiaries by Age and Years of Service**  
**Higher Education Employees**  
**Count and Average Annual Annuity**  
**as of June 30, 2013**

CURRENT AGE	YEARS OF SERVICE										TOTAL
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45+	
Under 55	2	0	0	0	0	0	1	0	0	0	3
	\$4,635	\$0	\$0	\$0	\$0	\$0	\$45,957	\$0	\$0	\$0	\$18,409
55-59	0	0	0	0	0	0	1	1	0	0	2
	\$0	\$0	\$0	\$0	\$0	\$0	\$20,615	\$58,092	\$0	\$0	\$39,353
60-64	0	2	0	0	0	0	0	1	1	0	4
	\$0	\$9,479	\$0	\$0	\$0	\$0	\$0	\$64,176	\$127,858	\$0	\$52,748
65-69	5	11	2	1	1	3	4	13	1	0	41
	\$30,365	\$24,683	\$22,498	\$6,196	\$16,196	\$31,944	\$84,789	\$79,569	\$133,915	\$0	\$51,074
70-74	12	70	9	5	6	8	26	16	3	0	155
	\$23,280	\$30,632	\$55,281	\$49,660	\$73,296	\$57,668	\$67,325	\$102,484	\$171,669	\$0	\$51,456
75-79	13	74	18	4	12	30	31	12	3	1	198
	\$23,189	\$22,638	\$28,299	\$68,009	\$45,005	\$49,056	\$73,986	\$93,614	\$104,592	\$212,258	\$44,004
80-84	2	56	16	9	12	29	23	10	0	0	157
	\$11,788	\$14,116	\$17,587	\$24,774	\$25,446	\$35,562	\$73,330	\$83,583	\$0	\$0	\$32,977
85-89	3	35	20	7	6	7	5	3	0	0	86
	\$10,781	\$7,588	\$14,396	\$11,231	\$12,049	\$27,957	\$39,911	\$51,595	\$0	\$0	\$14,963
90-94	0	17	7	3	4	2	2	1	0	0	36
	\$0	\$1,956	\$11,868	\$3,650	\$18,953	\$40,992	\$45,719	\$44,707	\$0	\$0	\$11,700
95 & Over	0	3	1	0	0	0	0	0	0	0	4
	\$0	\$2,229	\$5,593	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,070
TOTAL	37	268	73	29	41	79	93	57	8	1	686
	\$21,563	\$19,425	\$23,423	\$28,933	\$35,353	\$42,251	\$69,111	\$86,931	\$136,320	\$212,258	\$37,938

The average annuity does not include 13<sup>th</sup> checks.

**Distribution of Retired Members and Beneficiaries by Age and Years of Service**  
**Other Education Employees**  
**Count and Average Annual Annuity**  
**as of June 30, 2013**

CURRENT AGE	YEARS OF SERVICE										TOTAL
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45+	
Under 55	0	0	0	0	0	0	0	0	0	0	0
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
55-59	0	0	0	0	0	1	0	0	0	0	1
	\$0	\$0	\$0	\$0	\$0	\$7,519	\$0	\$0	\$0	\$0	\$7,519
60-64	0	0	0	0	0	0	1	2	0	0	3
	\$0	\$0	\$0	\$0	\$0	\$0	\$81,955	\$89,134	\$0	\$0	\$86,741
65-69	0	4	1	0	0	9	9	9	0	0	32
	\$0	\$14,453	\$38,125	\$0	\$0	\$43,910	\$78,162	\$92,798	\$0	\$0	\$63,430
70-74	0	40	6	4	3	20	8	3	0	0	84
	\$0	\$14,546	\$21,501	\$15,698	\$16,335	\$33,524	\$60,837	\$65,035	\$0	\$0	\$25,892
75-79	0	66	12	3	10	10	4	1	0	0	106
	\$0	\$11,066	\$13,198	\$19,935	\$21,101	\$28,572	\$52,347	\$75,266	\$0	\$0	\$16,320
80-84	0	60	20	6	7	3	3	1	1	0	101
	\$0	\$6,532	\$9,565	\$17,555	\$12,095	\$21,597	\$19,226	\$27,367	\$78,330	\$0	\$9,915
85-89	0	47	26	7	3	0	0	0	0	0	83
	\$0	\$4,031	\$6,350	\$7,674	\$8,715	\$0	\$0	\$0	\$0	\$0	\$5,234
90-94	1	30	10	4	0	0	0	0	0	0	45
	\$1,599	\$2,100	\$3,762	\$3,131	\$0	\$0	\$0	\$0	\$0	\$0	\$2,550
95 & Over	0	5	3	1	2	0	0	0	0	0	11
	\$0	\$585	\$2,014	\$2,264	\$6,905	\$0	\$0	\$0	\$0	\$0	\$2,276
TOTAL	1	252	78	25	25	43	25	16	1	0	466
	\$1,599	\$8,005	\$9,302	\$11,857	\$15,385	\$33,109	\$61,567	\$81,949	\$78,330	\$0	\$16,691

The average annuity does not include 13<sup>th</sup> checks.

**Distribution of Retired Members and Beneficiaries by Age and Years of Service**  
**City Employees**  
**Count and Average Annual Annuity**  
**as of June 30, 2013**

CURRENT AGE	YEARS OF SERVICE										TOTAL
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45+	
Under 55	0	0	0	0	0	0	0	0	0	0	0
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
55-59	0	0	0	0	0	0	0	0	0	0	0
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
60-64	0	0	0	0	1	0	1	2	1	0	5
	\$0	\$0	\$0	\$0	\$25,627	\$0	\$54,068	\$85,050	\$51,489	\$0	\$60,257
65-69	0	1	1	1	2	0	2	2	0	0	9
	\$0	\$29,475	\$12,847	\$12,474	\$42,654	\$0	\$48,682	\$83,148	\$0	\$0	\$44,863
70-74	0	1	1	1	1	2	2	0	0	0	8
	\$0	\$16,030	\$32,120	\$112,274	\$20,235	\$33,091	\$65,095	\$0	\$0	\$0	\$47,129
75-79	0	4	2	1	1	4	1	0	1	0	14
	\$0	\$18,701	\$1,693	\$24,028	\$25,322	\$34,637	\$26,244	\$0	\$63,191	\$0	\$25,395
80-84	0	1	2	0	3	0	0	0	0	0	6
	\$0	\$18,800	\$7,883	\$0	\$15,457	\$0	\$0	\$0	\$0	\$0	\$13,489
85-89	0	1	2	1	0	0	0	0	0	0	4
	\$0	\$10,290	\$5,863	\$4,594	\$0	\$0	\$0	\$0	\$0	\$0	\$6,652
90-94	0	0	1	0	0	0	0	0	0	0	1
	\$0	\$0	\$5,004	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,004
95 & Over	0	1	0	0	0	0	0	0	0	0	1
	\$0	\$1,786	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,786
TOTAL	0	9	9	4	8	6	6	4	2	0	48
	\$0	\$16,798	\$8,983	\$38,342	\$25,358	\$34,122	\$51,311	\$84,099	\$57,340	\$0	\$32,332

The average annuity does not include 13<sup>th</sup> checks.

**Distribution of Retired Members and Beneficiaries by Age and Years of Service**  
**County Employees**  
**Count and Average Annual Annuity**  
**as of June 30, 2013**

CURRENT AGE	YEARS OF SERVICE										TOTAL
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45+	
Under 55	0	0	0	0	0	0	0	0	0	0	0
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
55-59	0	1	0	0	0	0	0	0	0	0	1
	\$0	\$6,291	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,291
60-64	0	1	0	0	0	0	0	3	0	0	4
	\$0	\$1,227	\$0	\$0	\$0	\$0	\$0	\$106,288	\$0	\$0	\$80,023
65-69	0	0	1	0	1	0	3	3	0	0	8
	\$0	\$0	\$23,136	\$0	\$41,070	\$0	\$64,663	\$112,716	\$0	\$0	\$74,543
70-74	0	2	1	0	0	2	1	1	0	0	7
	\$0	\$6,558	\$25,607	\$0	\$0	\$43,819	\$41,911	\$66,979	\$0	\$0	\$33,607
75-79	0	2	2	2	3	2	0	0	0	0	11
	\$0	\$6,378	\$15,476	\$11,270	\$18,317	\$14,596	\$0	\$0	\$0	\$0	\$13,672
80-84	0	7	1	2	4	0	1	0	0	0	15
	\$0	\$5,811	\$4,646	\$8,345	\$10,986	\$0	\$21,289	\$0	\$0	\$0	\$8,483
85-89	0	6	2	1	0	0	0	0	0	0	9
	\$0	\$3,256	\$4,246	\$4,088	\$0	\$0	\$0	\$0	\$0	\$0	\$3,568
90-94	0	1	2	1	1	0	0	0	0	0	5
	\$0	\$1,086	\$3,747	\$3,862	\$1,833	\$0	\$0	\$0	\$0	\$0	\$2,855
95 & Over	0	0	1	0	0	0	0	0	0	0	1
	\$0	\$0	\$1,828	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,828
TOTAL	0	20	10	6	9	4	5	7	0	0	61
	\$0	\$4,735	\$10,216	\$7,863	\$15,755	\$29,208	\$51,438	\$103,428	\$0	\$0	\$24,325

The average annuity does not include 13<sup>th</sup> checks.



**Distribution of Retired Members and Beneficiaries by Age and Years of Service**  
**State Employees**  
**Count and Average Annual Annuity**  
**as of June 30, 2013**

CURRENT AGE	YEARS OF SERVICE										TOTAL
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45+	
Under 55	0	0	0	0	0	0	0	0	0	0	0
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
55-59	0	0	0	0	0	0	0	0	0	0	0
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
60-64	0	0	0	0	0	1	0	0	0	0	1
	\$0	\$0	\$0	\$0	\$0	\$44,521	\$0	\$0	\$0	\$0	\$44,521
65-69	0	2	1	1	0	5	1	5	1	0	16
	\$0	\$22,623	\$21,504	\$6,451	\$0	\$36,586	\$66,210	\$86,374	\$99,302	\$0	\$53,345
70-74	0	6	1	0	0	2	5	2	0	0	16
	\$0	\$21,485	\$11,472	\$0	\$0	\$17,946	\$46,256	\$72,756	\$0	\$0	\$34,567
75-79	0	13	3	0	0	4	5	0	0	0	25
	\$0	\$9,670	\$17,428	\$0	\$0	\$27,066	\$43,123	\$0	\$0	\$0	\$20,075
80-84	0	10	4	3	4	3	1	0	0	0	25
	\$0	\$10,532	\$20,805	\$16,233	\$13,141	\$17,110	\$18,255	\$0	\$0	\$0	\$14,376
85-89	0	8	1	2	0	0	1	0	0	0	12
	\$0	\$5,543	\$2,230	\$10,309	\$0	\$0	\$28,945	\$0	\$0	\$0	\$8,011
90-94	0	4	0	2	0	0	0	0	0	0	6
	\$0	\$1,502	\$0	\$4,281	\$0	\$0	\$0	\$0	\$0	\$0	\$2,428
95 & Over	0	2	1	2	0	0	0	0	0	0	5
	\$0	\$1,970	\$15,979	\$2,789	\$0	\$0	\$0	\$0	\$0	\$0	\$5,099
TOTAL	0	45	11	10	4	15	13	7	1	0	106
	\$0	\$10,210	\$16,972	\$8,991	\$13,141	\$28,196	\$43,101	\$82,483	\$99,302	\$0	\$23,100

The average annuity does not include 13<sup>th</sup> checks.

**Distribution of Retired Members and Beneficiaries by Age and Years of Service**  
**Political Subdivision Employees**  
**Count and Average Annual Annuity**  
**as of June 30, 2013**

CURRENT AGE	YEARS OF SERVICE										TOTAL
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45+	
Under 55	0	0	0	0	0	0	0	0	0	0	0
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
55-59	0	0	0	0	0	0	0	0	0	0	0
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
60-64	0	0	0	0	0	0	0	0	1	0	1
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$87,834	\$0	\$87,834
65-69	0	0	0	0	0	0	0	0	0	0	0
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
70-74	0	0	0	0	0	0	0	0	0	0	0
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
75-79	0	0	0	0	0	0	0	0	0	0	0
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
80-84	0	1	0	0	0	0	0	0	0	0	1
	\$0	\$2,096	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,096
85-89	0	1	0	0	0	0	0	0	0	0	1
	\$0	\$5,103	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,103
90-94	0	0	0	0	0	0	0	0	0	0	0
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
95 & Over	0	0	0	0	0	0	0	0	0	0	0
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL	0	2	0	0	0	0	0	0	1	0	3
	\$0	\$3,600	\$0	\$0	\$0	\$0	\$0	\$0	\$87,834	\$0	\$31,678

The average annuity does not include 13<sup>th</sup> checks.

**Distribution of Retired Members and Beneficiaries by Age and Years of Service**  
**All Groups**  
**Count and Average Annual Annuity**  
**as of June 30, 2013**

CURRENT AGE	YEARS OF SERVICE										TOTAL
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45+	
Under 55	2	0	0	0	0	0	1	0	0	0	3
	\$4,635	\$0	\$0	\$0	\$0	\$0	\$45,957	\$0	\$0	\$0	\$18,409
55-59	0	1	0	0	0	1	1	1	0	0	4
	\$0	\$6,291	\$0	\$0	\$0	\$7,519	\$20,615	\$58,092	\$0	\$0	\$23,129
60-64	0	3	0	0	1	1	2	8	3	0	18
	\$0	\$6,728	\$0	\$0	\$25,627	\$44,521	\$68,012	\$91,426	\$89,060	\$0	\$68,053
65-69	5	18	6	3	4	17	19	32	2	0	106
	\$30,365	\$22,447	\$23,435	\$8,373	\$35,644	\$39,644	\$73,694	\$87,684	\$116,609	\$0	\$56,391
70-74	12	119	18	10	10	34	42	22	3	0	270
	\$23,280	\$24,236	\$38,652	\$42,337	\$50,902	\$38,869	\$62,870	\$93,061	\$171,669	\$0	\$41,911
75-79	13	159	37	10	26	50	41	13	4	1	354
	\$23,189	\$16,471	\$20,389	\$37,841	\$31,974	\$40,668	\$66,947	\$92,202	\$94,241	\$212,258	\$32,346
80-84	2	135	43	20	30	35	28	11	1	0	305
	\$11,788	\$9,995	\$13,403	\$19,684	\$17,763	\$32,783	\$63,708	\$78,473	\$78,330	\$0	\$22,126
85-89	3	98	51	18	9	7	6	3	0	0	195
	\$10,781	\$5,452	\$9,323	\$8,979	\$10,938	\$27,957	\$38,084	\$51,595	\$0	\$0	\$9,647
90-94	1	52	20	10	5	2	2	1	0	0	93
	\$1,599	\$1,988	\$6,660	\$3,590	\$15,529	\$40,992	\$45,719	\$44,707	\$0	\$0	\$6,127
95 & Over	0	11	6	3	2	0	0	0	0	0	22
	\$0	\$1,394	\$4,907	\$2,614	\$6,905	\$0	\$0	\$0	\$0	\$0	\$3,019
TOTAL	38	596	181	74	87	147	142	91	13	1	1,370
	\$21,038	\$13,315	\$15,498	\$19,270	\$25,648	\$37,456	\$64,027	\$86,858	\$113,131	\$212,258	\$28,746

The average annuity does not include 13<sup>th</sup> checks.

**Table 2**  
**Liabilities**

**Liabilities as of June 30, 2012**

Non-retired	Total Balances from Employee Contributions	Total Balances from Employer Contributions	Total Balances
Active	\$ 4,502,410	\$ 13,535,974	\$ 18,038,384
Inactive	\$ 1,511,932	\$ 9,464,180	\$ 10,976,112
Non-members	<u>N/A</u>	<u>N/A</u>	<u>\$ 4,018,430</u>
Total	\$ 6,014,342	\$ 23,000,154	\$ 33,032,926
	Liability for Monthly Annuity	Liability for 13 <sup>th</sup> Check	Total Liability
Retired	\$ 349,068,942	\$ 43,088,693	\$ 392,157,635
<b>Total</b>			<b>\$ 425,190,561</b>

**Liabilities as of June 30, 2013**

Non-retired	Total Balances from Employee Contributions	Total Balances from Employer Contributions	Total Balances
Active	\$ 4,367,857	\$ 13,045,482	\$ 17,413,339
Inactive	\$ 1,919,255	\$ 10,756,347	\$ 12,675,602
Non-members	<u>N/A</u>	<u>N/A</u>	<u>\$ 3,294,486</u>
Total	\$ 6,287,112	\$ 23,801,829	\$ 33,383,427
	Liability for Monthly Annuity	Liability for 13 <sup>th</sup> Check	Total Liability
Retired	\$ 357,514,059	\$ 42,002,995	\$ 399,517,054
<b>Total</b>			<b>\$ 432,900,481</b>

Includes liabilities for both benefits guaranteed by the Plan and benefits guaranteed by the State.

Non-members are former members who are eligible for refunds. Their printed records were discovered and first included in the June 30, 2006 valuation. They are referred to as the Green Bar people.

**Table 3**  
**Asset Summary**

<b>Asset Allocation</b>	<b>6/30/2012</b>	<b>6/30/2013</b>
Cash	\$ 3,324,139	\$ 3,893
Total Receivables	10,645,310	14,514,763
Temporary Investments	20,388,502	23,349,654
Fixed Income Securities	95,423,877	79,726,516
Common and Preferred Stocks	208,548,884	213,798,447
Real Estate Mortgages and Contracts	20,245,189	23,515,425
Private Equity	0	0
Opportunistic Investments	9,369,771	17,034,654
Total Liabilities	<u>(13,565,182)</u>	<u>(23,557,035)</u>
Total Assets	\$ 354,380,490	\$ 348,386,317

<b>Asset Reconciliation</b>	<b>6/30/2012</b>	<b>6/30/2013</b>
Beginning of Year Market Value	\$ 398,966,300	\$ 354,380,490
Contributions	118,676	89,018
Investment Income	4,127,483	41,296,347
Benefit Payments	(48,201,651)	(46,898,942)
Refunds	(211,216)	(78,471)
Expenses	(418,763)	(399,792)
Other	<u>(339)</u>	<u>(2,333)</u>
End of Year Market Value	\$ 354,380,490	\$ 348,386,317

Rate of Return	0.99%	12.43%
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Includes assets for all System members including both members who retired prior to July 1, 1981, whose benefits are guaranteed by the State, and members who retired on or after July 1, 1981, whose benefits are guaranteed by the Plan.

**Table 4**  
**Funded Status**

		<b>6/30/2012</b>	<b>6/30/2013</b>
1.	Market value of assets	\$ 354,380,490	\$ 348,386,317
2.	Total System liabilities	\$ 425,190,561	\$ 432,900,481
3.	Funded Status (#1 / #2)	83.35%	80.48%
4.	Surplus/(Unfunded) (#1 - #2)	\$ (70,810,071)	\$ (84,514,164)

		<b>6/30/2013</b>		
		Pre-1981 <sup>1</sup>	Post-1981 <sup>2</sup>	Total
1.	Market value of assets	\$ 281,324	\$ 348,104,993	\$ 348,386,317
2.	Total System liabilities	\$ 349,558	\$ 432,550,923	\$ 432,900,481
3.	Funded Status (#1 / #2)	80.48%	80.48%	80.48%
4.	Surplus/(Unfunded) (#1 - #2)	\$ (68,234)	\$ (84,445,930)	\$ (84,514,164)

<sup>1</sup> Members who retired prior to July 1, 1981, whose benefits are guaranteed by the State.

<sup>2</sup> Members who retired on or after July 1, 1981, whose benefits are guaranteed by the Plan.

**Table 5**  
**Gain and Loss Analysis**

	<b>Fiscal Year Ended:</b>	
	<b>6/30/2012</b>	<b>6/30/2013</b>
1. Surplus/(Deficit) at Beginning of Fiscal Year	\$ (42,590,410)	\$ (70,810,071)
2. Interest on Line 1	(3,407,233)	(5,664,806)
3. Liabilities Experience Gain/(Loss)	1,302,999	(22,617,623)
4. Asset Experience Gain/(Loss)	<u>(26,115,427)</u>	<u>14,578,336</u>
5. Surplus/(Deficit) at End of Fiscal Year	\$ (70,810,071)	\$ (84,514,164)

<b><u>Sources of Liability Gain/(Loss)</u></b>	<b>Fiscal Year Ended:</b>	
	<b>6/30/2012</b>	<b>6/30/2013</b>
1. Annuity Mortality	\$ (405,451)	\$ (590,225)
2. 13th Check Mortality	921,707	751,735
3. Green Bar Members	1,213	(51,628)
4. Assumption Changes	0	(22,304,442)
5. Other	<u>785,530</u>	<u>(423,063)</u>
6. Total Liability Gain/(Loss)	\$ 1,302,999	\$ (22,617,623)

<b><u>Development of Asset Gain/(Loss)</u></b>	<b>Fiscal Year Ended:</b>	
	<b>6/30/2012</b>	<b>6/30/2013</b>
1. Market Value of Assets, Beginning of Year	\$ 398,966,300	\$ 354,380,490
2. Interest on Line 1	31,917,304	28,350,439
3. Contributions	118,676	89,018
4. Interest on Line 3	4,747	3,561
5. Benefit Payments	48,201,651	46,898,942
6. Refunds	211,216	78,471
7. Other	339	2,333
8. Interest on Lines 5 and 6 and 7	<u>2,097,904</u>	<u>2,035,781</u>
9. Expected Market Value of Assets, End of Year	\$ 380,495,917	\$ 333,807,981
10. Market Value of Assets, End of Year	\$ 354,380,490	\$ 348,386,317
11. Asset Gain/(Loss)	\$ (26,115,427)	\$ 14,578,336

## **Table 6**

### **Recommendations**

ASRS former rules say that benefits must be reduced when the System's funded status is less than 95%, and that the Board may increase benefits when funded status is greater than 105%. In this valuation, funded status is 80.48%. Based on the Arizona Attorney General's opinion letter of November 24, 2009, which was adopted by the Board, benefits cannot be "diminished or impaired" as defined under Article 29 of the Arizona Constitution. The ASRS Plan guarantees benefits for members who retired or will retire on or after July 1, 1981. The State guarantees the other System benefits. System liabilities valued using Plan assumptions for post-June 30, 1981 retirees are included in the Plan valuation.

We recommend no distribution of supplemental credits, based on our June 30, 2013 valuation and we continue to recommend annual valuations of the System to ensure that assets remain sufficient to provide benefits.



## **Table 7**

### **System Provisions**

The System is a Defined Contribution Plan, and was the original retirement program when ASRS was created in 1953. System benefits are based on the total amount of member and employer contributions, interest and supplemental credits in a member's retirement account at the time of retirement. Most members of the System elected to join the ASRS Plan when it became available, but those who never elected to receive benefits only under the ASRS Plan still accrue benefits and are entitled to receive retirement annuities according to the terms of the System.

While they are active, System members contribute a percentage of their salary and their employers contribute the same percentage to their System retirement accounts. The percentage is currently 7%. System retirement accounts are credited annually with interest at the actuarial valuation rate. Investment return in excess of actuarial interest is called a supplemental credit. System retirement accounts were considered guaranteed, except for supplemental credits, before the Attorney General's opinion letter of November 24, 2009. In light of that opinion, System retiree accounts are now considered entirely guaranteed.

At retirement, System members receive their choice of the benefits that the System will provide and the benefits that the defined benefit Plan will provide. The System benefit is a monthly annuity that is the actuarial equivalent of the entire retirement account balance. The Plan benefit is a percentage of final average salary, multiplied by years of service.

If the Board elects to distribute supplemental credits after a member's retirement, they are distributed to the member through 13<sup>th</sup> checks. The amount of a 13<sup>th</sup> check that arises from a supplemental credit is calculated actuarially as an annual annuity with a present value equal to the amount of the supplemental credit. When supplemental credits occur in more than one year of a member's retirement, the amounts are added and one 13<sup>th</sup> check is paid.

ASRS former rule said that if the funded status of the System as measured in an actuarial valuation is less than 95%, the Board will reduce non-guaranteed benefits so that the funded status is restored to 95%. If the funded status exceeds 105%, the Board may (but is not required to) increase benefits until the funded status declines to 105%. The Board is authorized to change actuarial assumptions. Changes in the investment earnings assumption or the mortality assumption will change the funded status and can thus lead to benefit increases or decreases. Methods for adjusting benefits are detailed in ASRS rules. Based on the Arizona Attorney General's opinion letter of November 24, 2009, which the Board has adopted, benefits cannot be "diminished or impaired" as defined under Article 29 of the Arizona Constitution. Under this opinion, all benefits are guaranteed. The ASRS Plan guarantees benefits for members who retired or will retire on or after July 1, 1981. The State guarantees the other System benefits. System liabilities valued using Plan assumptions for post-June 30, 1981 retirees are included in the Plan valuation.

The annuity options available to System members include straight life annuity, joint and survivor annuity with 100%, 66-2/3%, or 50% of the benefit continuing to the contingent survivor, or life annuity with 5, 10 or 15 years of certain payments.

## Table 8

### Actuarial Assumptions

#### 1. Investment Yield Rate

8%, net of all expenses

#### 2. Mortality

Prior Year: 1994 GAM-Generational table with Projection Scale AA

Rates at each age equal to 50% of the male rate plus 50% of the female rate.

Improved mortality for members with annual System income greater than \$14,400, as follows:

<u>Age</u>	<u>Factor Applied to Mortality Rate</u>
0 – 49	No Adjustment
50 – 75	80%
76 – 111	86%
112	88%
113	90%
114	92%
115	94%
116	96%
117	98%
118 and over	No Adjustment

This mortality assumption includes an assumption about mortality improvement before and after the valuation date.

Current Year: 1994 GAM-Generational table with Projection Scale BB. Decreased mortality rates for members with annual System income greater than \$14,400, and increased mortality rates for members with annual System income less than \$6,000, as below. After adjustments, rates are set back one year for males and two years for females.

<u>Age</u>	<u>Large Adjustment</u>		<u>Small Adjustment</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
0 – 49	No Adjustment		No Adjustment	
50 – 75	75%	84%	139%	133%
76 – 111	81%	90%	105%	100%
112	84%	92%	104%	100%
113	87%	94%	103%	100%
114	90%	96%	102%	100%
115	93%	98%	101%	100%
116	96%	100%	100%	100%
117	99%	100%	100%	100%
118 and over	100%	100%	100%	100%

This mortality assumption includes an assumption about mortality improvement before and after the valuation date.

**3. Liabilities for  
Nonretired Members**

Assumed to be their account balances.

**4. Data and Assets**

Census data and assets were provided by the staff at ASRS and were tested for consistency and reasonableness. We believe the data provided to be complete and accurate.